

## NON-DIRECTIONAL MAGNET FIELD BASED PROXIMITY RECEIVER WITH MULTIPLE WARNING AND MACHINE SHUTDOWN CAPABILITY

### ABSTRACT

A hazardous area warning system with a non-directional magnetic field based proximity receiver for warning personnel of an attendant hazard. The receiver includes a x-axis receiver with an antenna directed in a x direction, a y-axis receiver with an antenna directed in a y direction and a z-axis receiver with an antenna directed in a z direction. The antennas may be a wire loop wrapped around a ferrite core. The output from each of the three receivers are combined in an adder. The combined result from the adder is representative of the distance between the receiver and a warning transmitter antenna. A comparator determines whether the received signal indicates an attendant hazard, i.e., the receiver is too close to the warning transmitter. The receiver wearer is warned of the attendant hazard, visually and/or tactilly, e.g., with warning lights and/or vibrations. An encoder encodes the signal indication and a transmitter transmits the encoded signal. A data link receiver (located, for example, at a potentially hazardous machine) receives the encoded signal from the proximity receiver. The data link receiver decodes the encoded signal and activates a safety indicator light in response to the decoded information, a green light indicating normal operation, a yellow light indicating a caution or potentially hazardous condition, and a red light indicating danger. The data link receiver may shutdown and/or disable the machinery in a caution or dangerous condition.